eye and the prism till its wires reached the limit of separate visibility. The intensity of the light was made so great that no increase of intensity caused an increase in the visibility of the wires. Wave lengths 670, 605, 575, 535, 505, 470, 430 $\mu\mu$, corresponding to the seven spectral colors were used. The experiments show that the *color* of the light has scarcely any influence provided that the *intensity* is sufficient. The limit was reached for one observer when a wire subtended an angle of about 32.″8, for the other 27.″6, corresponding respectively to retinal images of 0.00234 mm., and 0.002 mm. The value generally assigned for this angle is 1′ and these experiments, when the measurement is made in the same way, i. e. from the middle of one wire to the middle of the next, give substantially the same result, namely: for one observer 65.″6, for the other 55.″2.

Ueber die Muskuläre Reaction und die Aufmerksamkeit. GÖTZ MARTIUS. Philos. Stud. Bd. VI, H. 2.

The question here discussed is the significance of the important distinction between "sensory" and "motor" forms of reaction as introduced by Lange. The distinction itself Martius fully corroborates, finding it somewhat small in practiced reactors (about 20σ), but marked in two novices (about 100σ.) He, however, agrees with Wundt that the distinction is confined to simple reactions, and questions the validity of Münsterberg's extension of this distinction to more complicated reactions. He has repeated Münsterberg's experiments of reacting with the five and with the ten fingers to the first five and first ten numbers, the reaction to five vocal sounds, to five different declensional forms, to five categories such as a "river," "a city," etc., and finds in all these cases where Münsterberg found a large and increasing difference between the "sensory" and "motor" reactions, only a slight difference; and while Münsterberg finds the "sensory" longer than the "motor," Martius has a flatly contradictory result. While unable to explain Münsterberg's results, he feels confident that no true distinction between motor and sensory was there involved, and that it is impossible to apply this distinction beyond the simple reaction. The second portion of the study describes simple reactions in which the subject, after each reaction, gave a judgment as to its comparative worth, and also described his attitude of mind at the moment of reacting. This very commendable method is not carried forth with sufficient system to allow of easy formulatable conclusions, but they leave in Martius's mind an increased confidence in the value of his results. A third point discussed at length is the mechanism by which the shortening process of the motor reaction takes place. In opposition to the view that it is a return to a reflex mode of action—a view which he treats too literally—he holds that the motor reaction anticipates and takes for granted the precise nature of the stimulus and therefore reacts to it at an earlier stage of its development.

The most essential and puzzling contribution of this paper is the opposition to Münsterberg's results; only careful and abundant research can explain this important point. J. J.

Untersuchungen zur Mechanik der activen Aufmerksamkeit. GEORG DWELSHAUVERS. Philos. Stud. Bd. VI, H. 2.

The author has determined anew the effect of a signal preceding the stimulus in reactions, with due reference to the distinction between "sensory" and "motor" reactions. He finds that reactions to the fall of a hammer preceded by a signal at an internal of 1½ seconds, were executed in 257σ sensory and 130σ motor; if the interval was 3 seconds, the times were 280σ and 133σ; if 6 seconds, 300σ and 149σ, (average of 5 subjects). On the other hand, when no signal preceded, the "sensory"